Amendments to the Claims:

1-3. (Canceled)

4. (Currently amended) A method for the mineralization of ~~of making mineralized~~ nanofibers, the method comprising: preparing a first solution with at least one peptide amphiphile comprising a C_6 or greater hydrocarbon component at its N-terminus and a lyophilic peptide component, wherein the peptide amphiphile has a positive or negative ~~net ionic~~ charge and at least one ion of a mineral salt, wherein the ion of the mineral salt has the same ~~signed net ionic~~ charge as the peptide-amphiphile; preparing a second solution with ion of a mineral salt having an opposite signed ionic charge to the ~~net ionic~~ charge of the peptide-amphiphile of said first solution; and mixing said first and second solutions to self-assemble said peptide amphiphiles into nanofibers and a nanofiber gel, wherein said mineralization occurs from initially dissolved mineral cations and anions along ~~minerals nucleate at~~ the nanofibers surfaces, wherein said nanofibers are fibrous cylindrical micelles.

5. (Previously amended) The method claim 4 further comprising: aging the mixture of said first and second solutions to control the size and rate of growth of said minerals on the self-assembled peptide amphiphile nanofibers.

6. (Original) The method of claim 4 further comprising: adjusting the pH of one of the solutions prior to mixing them together.

7-11. (Canceled)

12. (Currently amended) The method of claim 4, wherein said mineral cations and anions ~~minerals~~ are selected from the group consisting of hydroxyapatite, fluoroapatite, calcium oxalate, calcite, tin hydrogen phosphate, iron oxides, iron hydroxides, iron oxyhydroxyoxides, titanium dioxide, and zinc oxide.

13. (Previously amended) The method of claim 12, wherein the mineral is hydroxyapatite.

14. (Previously added) The method of claim 4, wherein the peptide-amphiphile has a net negative charge.